

**REMARKS**

Claims 1, 3-9 and 11 are pending in this application with claims 1, 3, 4, 6 and 11 being amended and claim 2 being cancelled by this response. Claims 1 and 11 have been amended for purposes of clarity and support for the amendments to claims 1 and 11 are found throughout the specification and shown clearly in the drawings. Claims 3, 4 and 6 have been amended to correct claim dependencies and provide antecedent basis for all terms. Claim 6 has also been amended for purposes of clarity to more clearly recite the features shown in the drawings. Thus, it is respectfully submitted that no new matter is added by these amendments.

**Objection to the Drawings**

The drawings are objected to as not showing every feature of the arrangement specified in the claims. Specifically, the Office Action contends that the “plurality of second coupling members included on the first coupling device, or the first and second coupling device” claimed in claim 6 is not shown in the claims. Claim 6 has been amended to remove the objected to term. Claim 6 now recites “at least one second coupling device includes at least one second coupling member adapted to fracture as a result of fracture of at least one said first coupling member.” The at least one second coupling member included in the at least one second coupling device is clearly shown in Figure 6 as bolt 355 and described in the corresponding portion of the specification. In view of the above remarks and amendments to claim 6, it is respectfully submitted that no new drawings are required and that this objection is satisfied and should be withdrawn.

**Objection to the Specification**

The disclosure is objected to for certain informalities. The specification, specifically, the paragraph beginning on page 9, line 21, has been amended to recite that “A second coupling device in the form of shear bolt 113 and a first coupling device in the form of torque ring 118 are

also shown.” These elements are clearly shown in the Drawings as filed and thus no new matter is added by the amendments to the specification. These amendments provide appropriate disclosure in the specification for reference characters 113 and 118.

Applicant further respectfully submits that the amendments made in the Response filed on December 26, 2007 to the paragraphs beginning on page 7, lines 10 and 21 provide antecedent basis for the terms “torque transfer means” and “removable securing device”. Specifically, the paragraph beginning on page 7, line 10 was amended to recite “A second engaging device in the form of two keys (14, 15) are provided at diametrically opposite locations across the nave plate (11), the two keys (14, 15) being a sliding fit within corresponding key ways (16, 17) cut in the face of a torque transfer device provided as a body member in the form of torque ring (18).” Additionally, the paragraph beginning on page 7, line 21 was amended to recite “This assembly can then be bolted to a vehicle axle flange (26) by means of removable securing devices in the form of bolts passing through holes (27, 28) in the drive plate (21) and the axle flange (26) respectively.” In view of these amendments to the specification made in the response filed on December 26, 2007, it is respectfully submitted that there is sufficient antecedent basis for the terms “torque transfer means” and “removable securing device”. It is thus further respectfully submitted that this objection is satisfied and should be withdrawn.

**Rejection of Claims 1-3, 5, 7, 9 and 11 under 35 U.S.C. 102(b)**

Claims 1, 2, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiss.

The present claimed arrangement provides a wheel assembly for a vehicle and a vehicle. The assembly includes a wheel rim adapted to support a tire, a first support plate mounted to the rim and a second support plate adapted to be mounted to an axle. At least one first coupling device is connected between the first support plate and the second support plate for transferring torque between the first and second support plates. When the first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is

independent of the at least one first coupling device. At least one second coupling device connected between the first support plate and second support plate prevents radial displacement. The or each second coupling device is incapable of transferring, from the first support plate to the second support plate, radial forces, tending to remove the assembly from the axle when the radial forces exceed a predetermined level. Independent Claims 1 and 11 each include features similar to those discussed above and thus all arguments presented hereinbelow apply to each of these claims.

Amended claim 1 clearly states that the first coupling device (torque ring 18) transfers torque between the first and second support plates and when the first coupling device is engaged, prevention of radial displacement of the support plates is performed independently of the first coupling device. Similarly, the second coupling device (shear bolt 13) clearly prevents the radial displacement between the first and second support plates. Claim 1 further recites that the “second coupling device is incapable of transferring... radial forces, tending to remove the assembly from the axle when the radial forces exceed a predetermined level.”

As is clear from claim 1, the first coupling device (torque ring 18) is present simply to transfer torque and makes no contribution to preventing the radial displacement of the support plates relative to each other, whilst the second coupling device only prevents radial displacement of the support plates relative to each other and does so only to a predetermined limit.

Weiss describes a play eliminating wheel fitting. The wheel assembly of Weiss includes a wheel hub mounted to a wheel mount. The wheel hub and wheel mount include intermeshing profiles in the form of teeth for transmitting torque from the mount to the hub. This assembly is provided to create a centered and reproducible mounting between the mount and rim that is free of backlash.

The Office Action equates the wheel rim/hub 17 of Weiss to the first support plate of the present claimed arrangement, the mount 3 of Weiss to the second support plate and the intermeshing teeth 5, 12 of Weiss to the first coupling means. However, unlike the present

claimed arrangement, the intermeshing teeth 5, 12 of Weiss clearly contribute to the prevention of radial displacement of the rim/hub 17 of Weiss. For example, in Weiss, the wedge-shaped faces 13 and triangular profile sections 14 of interlocking profilings 5 and 12, act to transfer torque. However, when the wheel is assembled, these same components also contribute to preventing radial movement of the wheel relative to the axle. Unlike the present claimed arrangement, in Weiss, the structure most closely resembling the torque transfer components (that is, those equivalent to the first coupling device) at least partially contribute to preventing the radial displacement of the components that are equivalent to the first and second support plate. In other words, the torque transfer components at least partially contribute to preventing radial displacement of the wheel relative to the axle. Thus, Weiss neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in claim 1 of the present arrangement.

As the torque transfer components of Weiss partially contribute to preventing radial displacement of the wheel relative to the axle, Weiss can NOT be described as disclosing that, when a first coupling device is engaged, prevention of radial displacement is independent of the first coupling device. Thus, as Weiss neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” it is respectfully submitted that the present arrangement is patentable over Weiss.

Additionally, Weiss relates to a play eliminating wheel fitting for use in vehicles such as sports racing cars. However, the present arrangement addresses the problem of limiting the force of blast impacts from an explosion such as a land mine being transferred through the axle into the vehicle. The present arrangement is concerned with minimizing injury to occupants of a

vehicle as a result of an explosion under the wheel assembly. In order to accomplish this objective, the present claimed arrangement acts to prevent the predominant forces generated by an explosion from being transferred to the axle and therefore to the vehicle body. This is accomplished using first and second coupling devices wherein the first coupling device transfers torque between first and second support plates and does not contribute to prevention of radial displacement while the second coupling device prevents radial displacement and is incapable of transferring radial forces from the first support plate to the second support plate. As Weiss is only concerned with eliminating play in a wheel fitting of a racing car, Weiss does not contemplate accounting for an explosion under a wheel of the vehicle and thus is not concerned with providing a wheel assembly that does not transfer the force of an explosion into the vehicle. Thus, Weiss neither discloses nor suggests "at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device" as recited in the present claimed arrangement.

Looking at this in more detail, in the present arrangement the first coupling device is incapable of transferring radial forces between the first and second support plates, and therefore between the wheel and the axle. As a result, the radial force transferred from wheel to axle is limited entirely by the second coupling device. In Weiss, the first and second coupling devices combine to prevent radial displacement of the wheel relative to the axle. Therefore the amount of force required to remove the wheel from the axle cannot be easily controlled and therefore other factors influence the force transferred to the axle. In the present arrangement since the prevention of radial displacement of the first support plate relative to the second support plate and thus of the wheel relative to the axle is independent of the first coupling device, it is only the second coupling device that performs this function. This allows the radial force required to remove the wheel from the axle to be easily limited (to the shear breaking strength of the shear bolt) whilst allowing large torque forces to be transferred to the wheel as required. Thus, Weiss neither discloses nor suggests "at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates

and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in the present claimed arrangement.

Claim 2 has been cancelled by this response. As claims 3, 5 and 9 are dependent on claim 1, it is respectfully submitted that these claims are patentable for the same reasons as claim 1 discussed above. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

**Rejection of Claims 1, 2, 5, 7, 9 and 11 under 35 U.S.C. 102(b)**

Claims 1, 2, 5, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuhlman.

Kuhlman describes a system for easily changing a tire. The system includes a rim, an attachment assembly and a rotor. The attachment assembly extends from a first side of the rim and is received by an aperture extending through a central portion of the rotor. The aperture in the rotor includes a plurality of holes for selectively receiving rods extending from the attachment assembly. The Office Action equates the wheel rim 11 of Kuhlman to the first support plate of the present claimed arrangement, the rotor 13 to the second support plate of the present claimed arrangement, the depression and connection members 35, 36, 37 and 38 to the first coupling members of the present claimed arrangement and the piston engagement portion 30 to the second coupling device of the present claimed arrangement. Applicant respectfully disagrees with these assertions.

In Kuhlman, when the connection members 35 and rim depressions 36 of rim 11 and the connection members 37 and rotor depressions 38 with which they engage on rotor 13, are all assembled, these components clearly contribute to the prevention of radial displacement of the rim 11 of Kuhlman. For example, in Kuhlman, the connection members and depressions, act to transfer torque between the rotor 13 and rim 11. However, when the wheel is assembled these

same components also contribute to preventing radial movement of the wheel relative to the rotor. Unlike the present claimed arrangement, in Kuhlman, the structure most closely resembling the torque transfer components (that is those equivalent to the first coupling device) at least partially contribute to preventing the radial displacement of the components that are equivalent to the first and second support plate. In other words, the torque transfer components at least partially contribute to preventing radial displacement of the wheel relative to the rotor. Thus, Kuhlman neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in claim 1 of the present arrangement.

As the torque transfer components of Kuhlman partially contribute to preventing radial displacement of the wheel relative to the rotor, Kuhlman can NOT be described as disclosing that, when a first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of the first coupling device. Thus, as Kuhlman neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” it is respectfully submitted that the present arrangement is patentable over Kuhlman.

The present claimed arrangement includes “a wheel rim adapted to support a tire” and “a first support plate mounted to said rim”. Kuhlman defines the element referred to by reference numeral 11 as the wheel rim. The wheel rim 11 of Kuhlman is one of three (3) main elements of the system of Kuhlman. The other elements being the attachment assembly and the rotor. Nowhere in Kuhlman is there a first support plate mounted to the rim as in the present claimed arrangement. Kuhlman only provides a rim from which the attachment assembly and rim connections members extend. Therefore, Kuhlman neither discloses nor suggests “a wheel rim

adapted to support a tire; a first support plate mounted to said rim” as recited in the present claimed arrangement.

The Office Action further contends that the rotor 30 is equivalent to the second support plate of the present claimed arrangement. Applicant respectfully disagrees. There is no disclosure or suggestion that the rotor is adapted to be mounted to an axle. The rotor is designed for turning the rim. Thus, Kuhlman neither discloses nor suggests “a second support plate adapted to be mounted to an axle” as recited in the present claimed arrangement.

Additionally, contrary to the assertions in the Office Action, the piston engagement portion 30 of Kuhlman is not the same as the second coupling device of the present claimed arrangement. Firstly, the piston engagement portion 30 has an inwardly threaded wall and is contained within the rim 11 (see Figure 4 of Kuhlman). This is unlike the present claimed arrangement in which the second coupling means is connected between the first and second support plates. As the piston engagement portion 30 is positioned within the rim, it cannot be connected between the first and second support plates. Additionally, as discussed above, Kuhlman does not even include first and second support plates between which the piston engagement portion 30 can be connected. Therefore, Kuhlman neither discloses nor suggests “second coupling means connected between said first and second support plates” as recited in the present claimed arrangement. In addition, the piston engagement portion 30 is included in the hub member and engages the piston 26, the piston being selectively moved by the hub member 29. Nowhere in Kuhlman is it disclosed or suggested that the “second coupling means ... transferring radial and axial forces from said first support plate to said second support plate” as recited in the present claimed arrangement.

Furthermore, Kuhlman relates to a vehicle wheel attachment system for easily changing a tire. However, the present arrangement addresses the problem of limiting the force of blast impacts from an explosion such as a land mine being transferred through the axle into the vehicle. The present arrangement is concerned with minimizing injury to occupants of a vehicle as a result of an explosion under the wheel assembly. In order to accomplish this objective, the



present claimed arrangement acts to prevent the predominant forces generated by an explosion from being transferred to the axle and therefore to the vehicle body. This is accomplished using first and second coupling devices wherein the first coupling device transfers torque between first and second support plates and does not contribute to prevention of radial displacement while the second coupling device prevents radial displacement and is incapable of transferring radial forces from the first support plate to the second support plate. As Kuhlman is only concerned with providing a system allowing for easily changing a tire, Kuhlman does not contemplate accounting for an explosion under a wheel of the vehicle and thus is not concerned with providing a wheel assembly that does not transfer the force of an explosion into the vehicle. Thus, Kuhlman neither discloses nor suggests "at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device" as recited in the present claimed arrangement.

In view of the above remarks, it is respectfully submitted that the present claimed arrangement as claimed in claim 1 is not anticipated and patentable over Kuhlman. Claim 11 includes features similar to those of claim 1 and thus is patentable for the same reasons discussed above regarding claim 1. Claim 2 has been cancelled. Claims 5 and 9 are dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

**Rejection of Claims 1, 2, 5, 8, 9 and 11 under 35 U.S.C. 102(b)**

Claims 1, 2, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (Japanese document 59-118502).

Hayashi describes a mechanism for easing the operation of mounting and demounting a wheel from a hub. The flange of an adapter is welded to the hub and a fitting plate is lapped onto the adapter. A nut is screwed around a stud bolt which is integrated with the hub, securing the

hub, adapter and fitting plate together. A holding disc is pushed on the adapter with a torque pin extending from the holding disc being received by the fitting plate. A center collar is engaged in a shaft hole of the holding disc and fits around a center bolt projecting from the adapter.

The Office Action equates the pin receiving hole 16 and “coupling device” 3 of Hayashi to the first coupling means for transferring torque of the present claimed arrangement and the center bolt B and hub H to the second coupling device of the present claimed arrangement. Applicant respectfully disagrees with these assertions.

In Hayashi, when the pin receiving hole 16 and “coupling device” 3 are assembled, these components clearly contribute to the prevention of radial displacement of the rim 11 of Hayashi. For example, in Hayashi, the pin receiving hole 16 and “coupling device” 3 act to transfer torque from the hub H to the wheel W. However, when the wheel is assembled these same components, pin receiving hole 16 and “coupling device” 3, also contribute to preventing radial movement of the wheel relative to the hub. Unlike the present claimed arrangement, in Hayashi, the structure most closely resembling the torque transfer components (that is those equivalent to the first coupling device) at least partially contribute to preventing the radial displacement of the components that are equivalent to the first and second support plate. In other words, the torque transfer components at least partially contribute to preventing radial displacement of the wheel relative to the rotor. Thus, Hayashi neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in claim 1 of the present arrangement.

As the torque transfer components of Hayashi partially contribute to preventing radial displacement of the wheel relative to the rotor, Hayashi can NOT be described as disclosing that, when a first coupling device is engaged, prevention of radial displacement is independent of the first coupling device. Thus, as Hayashi neither discloses nor suggests “at least one first coupling

device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” it is respectfully submitted that the present arrangement is patentable over Hayashi.

Additionally, Hayashi relates to a vehicle wheel mounting and demounting system for easily changing a tire. However, the present arrangement addresses the problem of limiting the force of blast impacts from an explosion such as a land mine being transferred through the axle into the vehicle. The present arrangement is concerned with minimizing injury to occupants of a vehicle as a result of an explosion under the wheel assembly. In order to accomplish this objective, the present claimed arrangement acts to prevent the predominant forces generated by an explosion from being transferred to the axle and therefore to the vehicle body. This is accomplished using first and second coupling devices wherein the first coupling device transfers torque between first and second support plates and does not contribute to prevention of radial displacement while the second coupling device prevents radial displacement and is incapable of transferring radial forces from the first support plate to the second support plate. As Hayashi is only concerned with providing a system allowing for easily changing a tire, Hayashi does not contemplate accounting for an explosion under a wheel of the vehicle and thus is not concerned with providing a wheel assembly that does not transfer the force of an explosion into the vehicle. Thus, Hayashi neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in the present claimed arrangement.

The pin receiving hole 16 and “coupling device” 3 of Hayashi assist in coupling the holding disc D and fitting plate F together. The “coupling device” 3, identified in the Office Action as the equivalent to the first coupling device of the present claimed arrangement, extends into the holding disc D, identified in the Office Action as equivalent to the supporting plate of

the present claimed arrangement. The pin receiving hole 16 extends through the fitting plate and receives a torque pin 4 from the “coupling device”. This is unlike the present claimed invention in which the “at least one first coupling device, connected between said first and second support plates”. In Hayashi, the element identified as equivalent to the first coupling device is not connected between the first and second support plates as in the present claimed invention. To the contrary, as is clearly seen from the drawing figures, the “coupling device 3” extends into the holding disk and then extends through a pin receiving hole 16 in the plate F.

In view of the above remarks, it is respectfully submitted that the present invention as claimed in claim 1 is not anticipated by and patentable over Hayashi. Claim 11 includes features similar to those of claim 1 and thus is patentable for the same reasons discussed above regarding claim 1. Claim 2 has been cancelled. Claims 5, 8 and 9 are dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

**Rejection of Claims 6 and 7 under 35 U.S.C. 103(a)**

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss.

Claims 6 and 7 are dependent on claim 1 and thus are patentable for the same reasons as claim 1 discussed above. More specifically, Weiss neither discloses nor suggests “at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device” as recited in claim 1 of the present arrangement.

Additionally, as discussed above, Weiss has no reason to prevent radial displacement of the first support plate relative to the second support plate is independent of the at least one first coupling device. Weiss relates to a play eliminating wheel fitting for use in vehicles such as

sports racing cars. However, the present arrangement addresses the problem of limiting the force of blast impacts from an explosion such as a land mine being transferred through the axle into the vehicle. The present arrangement is concerned with minimizing injury to occupants of a vehicle as a result of an explosion under the wheel assembly. In order to accomplish this objective, the present claimed arrangement acts to prevent the predominant forces generated by an explosion from being transferred to the axle and therefore to the vehicle body. This is accomplished using first and second coupling devices wherein the first coupling device transfers torque between first and second support plates and does not contribute to prevention of radial displacement while the second coupling device prevents radial displacement and is incapable of transferring radial forces from the first support plate to the second support plate. As Weiss is only concerned with eliminating play in a wheel fitting of a racing car, Weiss does not contemplate accounting for an explosion under a wheel of the vehicle and thus is not concerned with providing a wheel assembly that does not transfer the force of an explosion into the vehicle. Thus, Weiss neither discloses nor suggests "at least one first coupling device, connected between said first and second support plates, for transferring torque between said first and second support plates and, when said first coupling device is engaged, prevention of radial displacement of the first support plate relative to the second support plate is independent of said at least one first coupling device" as recited in the present claimed arrangement.

In view of the above remarks, it is respectfully submitted that the present claimed arrangement as claimed in claim 1 patentable over Weiss. Claims 6 and 7 are dependent on claim 1 and thus are also patentable for the same reasons discussed above regarding claim 1. It is thus respectfully submitted that this rejection is satisfied and should be withdrawn.

Having fully addressed the Examiner's rejections, it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

Application No. 10/531,364

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No additional fee is believed due. However, if a fee is due, please charge the fee to  
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Respectfully submitted,  
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